3 Year PhD Studentship available for September 2019

Department: Genetics and Genome Biology

Supervisors: Dr Tim Beck and Prof Tony Brookes

Eligibility: UK and EU candidates only

Project Title: Semantic bridges between genetics research, healthcare and species

Project Description:

A genome-wide association study (GWAS) identifies the genetic variants associated with a trait, such as a disease. The comprehensive GWAS Central database (https://www.gwascentral.org) (Beck et al, 2014) collates published summary-level GWAS findings and standardises the trait descriptions by applying ontologies. Ontologies allow heterogeneous datasets to be integrated and compared by using the same unambiguous terms and identifiers. GWAS Central currently uses research-focussed ontologies, however, greater integration with clinical datasets would be achieved by additionally utilising clinically-focussed ontologies, such as those used by the NHS. Furthermore, GWAS data could be effectively integrated with genetic association data from other mammalian species, such as mouse, by mapping equivalent traits. International efforts to map between distinct ontologies provide a path for enabling cross-species genetic association data integration.

This project will build on the GWAS Central database and existing semantics capabilities to provide new methods and interfaces to (1) visually and programatically interrogate GWAS data using a range of research and clinical ontologies; and (2) integrate and compare GWAS data with genetic association data from other public sources, and across the species divide. Depending on the skills, interests and progress, possible extensions include (i) semantic web GWAS data publishing, and interlinking to diverse sources of Linked Data; (ii) natural language processing of GWAS publication full-texts to extract genotype and phenotype information; (iii) developing and implementing an application ontology for GWAS summary-level metadata.

References:

Funding details:

This fully-funded studentship is available to Home/EU students and covers UK/EU tuition fees plus an annual tax-free stipend for 3 years (for 2018/19 the stipend rate is £14,777). The studentship would be held in the Department of Genetics and Genome Biology in the College of Life Sciences at the University of Leicester and commence 23 September 2019.

Entry requirements:

The ideal applicant will have a detailed understanding of Computer Science or Bioinformatics and hold/or expect to obtain a UK Bachelor Degree 2:1 or better in a relevant subject. Applicants with degrees in Biological Sciences would need to demonstrate advanced computing skills including working with databases (relational or non-relational) and have the ability to code original applications in languages commonly used in bioinformatics, such as Python or Perl. The University of Leicester English language requirements apply where applicable.

How to apply:

You should submit your application using our online application system. Apply for a PhD in Genetics

In the funding section of the application please indicate you wish to be considered for a CLS/GGB Studentship

In the proposal section please provide the name of the supervisor and project you want to be considered for.

Project / Funding Enquiries:

You are encouraged to make informal enquiries in the first instance, by contacting Dr Tim Beck timbeck@leicester.ac.uk

Application enquiries to pgradmissions@le.ac.uk

Closing date for applications 28 January 2019